PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

SERIES C. JOURNAL OF MEETINGS

Volume 22 No. 7, 1957

ORDINARY MEETING.

Wednesday, 6th November, 1957, at 5.30 p.m.

AGENDA.

1. Confirmation of the Proceedings of the Ordinary Meeting held on 2nd October, 1957.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 39].
6. Admission of Fellows.
7. Papers accepted for publication in the *Transactions*.
8. Exhibits.

As the December meeting will be devoted to exhibits and brief communications, Fellows are requested to reserve any exhibits that are not urgent until that meeting (4th December).

9. Communications.

Mr. R. C. Fisher

A Reinvestigation of Flightlessness in the Coleoptera of Madeira.

[Abstract.]

The widespread occurrence of flightlessness among the Coleoptera of Madeira was first pointed out by Wollaston (1854) and later used by Darwin in the *Origin of Species* (1859) as an example of adaptation to island life. Darwin suggested that a winged beetle would stand less chance of surviving on an island where it would be subject to the action of winds removing it to sea, than one which flew less or was incapable of flight. This hypothesis of the so-called "' wind factor " has received much uncritical acceptance, and it has been widely assumed that flightlessness is an adaptation to island life, despite the fact that it is equally characteristic of certain mountain, desert and cave living faunas.

This paper will review the results of an investigation made in 1954, to find out whether the percentage of flightless species is as high as Wollaston had originally

stated, with reference, not only to the number of species in which it occurs, but also to the numbers of individuals of flying and flightless species.

In all cases the percentage of flightless species in the fauna was found to be about the same as that reported by Wollaston, but the percentage of flightless individuals in the population was even greater. Population samples taken over an altitude range of Madeira have shown that ecological conditions of island life do not have a uniform effect on the insect fauna, and that it is in adaptation to different habitats formed by marked vegetational zonation that wings have been lost or retained. Darwin's wind factor does not appear to be of universal importance in the selection of flightless species, except on very small exposed islands. Ecological factors such as altitude, degree of exposure to solar radiation and humidity variation, and the microhabitats produced by topography and vegetation will be brought into the discussion to see whether they offer any alternative explanation of the loss of ability to fly.

TEA will be served in the Library before the meeting.

NOTICES.

International Society of Soil Science.

A Colloquium on Research Methods in Soil Zoology will be held at Rothamsted Experimental Station from 10th to 14th July, 1958, immediately preceding the International Zoological Congress.

Further details are given on the Society's notice board, or may be obtained from the Organising Secretary, Dr. P. W. Murphy, Rothamsted Experimental Station, Harpenden, Herts.

Forthcoming Ordinary Meetings.

4th December, 1957.

Exhibits and brief communications.—As in previous years, this meeting will be devoted to small exhibits of special interest requiring only short explanations.

15*th January*, 1958.

To be arranged.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 2ND OCTOBER, 1957.

Professor O. W. RICHARDS, President, in the Chair.

Present, 100 Fellows and 22 Visitors.

Before the meeting opened, the President extended a welcome to Professor P. J. S. Moure, of the University of Parana, Brazil.

The minutes of the Ordinary Meeting held on 3rd July were confirmed and signed by the President.

The names of the following candidates for election were read for the first time: Mr. David Seymour Brown; Mr. Stephen James Curry, M.A.; Mr. Robin Edwards; Dr. Frederick Rudolf Hollins, M.B., B.Ch.; Mr. Herbert Henry Huxley, M.A.; Mr. Handel Keate; Mr. Joseph William Newbold; Professor

Robert Omar Rilett, B.A., M.A., Ph.D. ; Mr. Michael Peter Rushton, B.Sc. ; Mr. Hanuman Prasad Saxena ; Mr. Kiril Sidor ; Mr. Alexander Reginald Tindall, B.Sc. ; Mr. William Nelson Yule, B.Sc. ; and Dr. Mohamed Abdel Aziz Zaher, M.Sc., Ph.D.

For the second time (taken as read) : Dr. Robert Barrass, B.Sc., Ph.D. ; Mr. William Noel Beesley ; Dr. Raymond Foster ; Mr. Brian McCullough Gerard ; Mr. Peter John Kingsley-Heath ; Mr. Joseph Maurice McManus ; Dr. Bhup Kishore Tandan, M.Sc., Ph.D. ; Professor Vasco M. Tanner, Ph.D. ; and Mr. Robert Octave Stewart.

The Secretary read the names of the following newly elected Fellows of the Society: Dr. Judson Linsley Gressitt, Ph.D., Bishop Museum, Honolulu 17, Hawaii, U.S.A. ; Dr. Delfa Guiglia, Museo Civico di Storia Naturale, Via Brigata Liguria, N.9, Genova, Italy ; Mr. Ian Robert Harrison, Research Department, Veterinary Science Division, Boots Pure Drug Co., Ltd., Thurgarton, Notts. ; Mr. Syed Imam Hossain Kazi, Directorate of Agriculture, Department of Plant Protection, Dacca, E. Pakistan ; Mr. Mohammad Abdul Khaleque, Narandi, P.O. Monohordi, Dacca, E. Pakistan ; Mr. Khushi Muhammad Khalid, B.Sc., Plant Protection Service, Punjab Agricultural College and Research Institute, Lyallpur, W. Pakistan ; Mr. Ahmadullah Khan, B.Sc., Insect Pest Control Scheme, Charsadda, Peshawar District, W. Pakistan ; Mr. Leonard Philip Lefkovitch, B.Sc., 5 Mansfield Mews, London, W.1 ; Mr. Syed Abdul Munim, Mustafa Pur, P.O. Moulvi Bazar, Sylhet, E. Pakistan ; Mr. Peter J. S. Olney, B.Sc., The Wildfowl Trust, Slimbridge, Glos. ; Mr. Ahmed Abdur Rahim, B.Sc., c/o Deputy Director of Agriculture, Multan Region, Bahawal Pur, P.O. Bagdad-ul-gadeed, W. Pakistan ; Dr. Arthur Harold Bruce Rydon, L.R.C.P., M.R.C.S., P.O. Box 101, Arusha, Tanganyika, E. Africa ; Mr. Prakash Sarup, M.Sc., Division of Entomology, Indian Agricultural Research Institute, New Delhi, 12, India ; Mr. Krishnamoorti Satyanarayana, Prabhat Bhuram Street, No. 9, Bhaktinagar, Rajkot, India ; Mr. Fazal Rahim Shaikh, B.A., Plant Protection, Fazal Manzil Model Town, Bahawal Pur, W. Pakistan ; Mr. Hajee Shareef, B.Sc., Department of Plant Protection, East Wing, Sofia House, Dhanmandai, Dacca, E. Pakistan ; Mr. Don Quintus Suriaratchie, Sunshine, Walpola, Matara, Ceylon ; Mr. Arthur Woods, M.A., Rowhill Farm, Upper Dartford Road, Hextable, Kent ; and Mr. Kurukulaarachchige Don Marceline Blandy Nanayakkara Wijegooneratne, Kurukulawa, Ragamm, Ceylon.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. A. L. Capener, Dr. V. H. Chambers, Mr. L. R. Cole, Mr. C. B. Cottrell, Mr. J. F. Newman, Mr. R. G. Pearson, Mr. A. South, Mr. M. T. Tanton and Dr. L. H. Williams signed the Obligation Book and were admitted Fellows of the Society.

The Honorary Secretary exhibited, on behalf of **Lt. Col. A. N. Brangham,** a specimen of *Carabus violaceus* L. with very short elytra, taken at Possingworth Park, Cross-in-Hand, Sussex. There were not many recorded cases of abnormal brachelytry in Coleoptera, and the elytra are very rarely as short as in the specimen exhibited. The elytra of the specimen are well formed and symmetrical.

Mr. P. F. Mattingly exhibited a mosquito larva of the genus *Toxorhynchites* (*Megarhinus* Auctt.) which he said had been found in a tree hole near Polykastron (Karasouli) in northern Greece during the first world war. It was the only specimen of the genus ever to be found in Europe. The nearest records from elsewhere were from the southern Sudan, the western Himalayas and eastern Manchuria. There could be little doubt that this was a relict species with a very limited distribution. Another relict species, this time a *Stegomyia*, had been found in the same general area and was known also from Crete and from the eastern end of the Black Sea. The nearest relative of this species had a discontinuous distribution embracing north-west India and the sudano-zambesian savannas of Africa. The occurrence of these and other relict species in the southern Palaearctic seemed to suggest that there had at one time been an extensive northward expansion of the Ethiopian mosquito fauna into the southern Palaearctic. He saw no reason to date this any earlier than the last interglacial. One *Stegomyia* with very strong Ethiopian affinities occurred as far east as the well known glacial wooded refuge embracing south-east Manchuria, north-east China and Korea, and he had very recently obtained evidence of the occurrence in the same area of the genus *Heizmannia*, a forest group otherwise restricted to India and the Indomalayan area. It appeared therefore that the African and Indomalayan forest faunas had at one time extended into the same part of southern Manchuria.

Mr. Mattingly said that he had information that drainage operations were in progress in the part of Macedonia which was concerned and he feared these might ultimately affect the forests in which the *Toxorhynchites* occurred. He hoped that anyone collecting in northern Greece or southern Jugoslavia would keep an eye open for this very rare and interesting species.

The President asked if he had understood Mr. Mattingly to say that the larva of this species was predaceous. Mr. Mattingly replied that all the larvae of the genus were obligatory predators.

The President gave a paper on predacious insects on broom, an abstract of which appeared on pages 29–30.

A short discussion followed in which Mr. W. H. Potts asked whether the method of examining the gut contents involved a precipitin reaction, to which Mr. J. P. Dempster replied that this was so. They had had some cross reaction with other chrysomelids, which it was possible to absorb out.

Mr. P. F. Mattingly said that precipitin tests on the stomach contents of mosquitoes had been in use for nearly thirty years. More recently chromatographic methods had been employed for the specific and even infraspecific identification of mosquito tissues and body fluids. It was possible that these might prove to be of some use in the present connection, though he was not very hopeful.

Professor Richards emphasized that his real problem had not been to find all the predators but how many had eaten one particular beetle species.

In reply to an enquiry by Dr. Hobby as to whether there were any direct observations of Mirid bugs feeding on the beetle, Dr. Waloff remarked that there was only one such record, because it was so difficult to observe in nature.

Mr. E. B. Britton having enquired whether, as beetle material for injection was difficult to obtain in sufficient quantity, a smaller mammal than the rabbit could not be used, it was pointed out that the large quantities of blood required left no alternative but to use the rabbit.

Mr. Mattingly said that an obvious suggestion would be the use of radioactive markers. In the mosquitoes it was customary to employ isotopes having a rather short half-life. This was because it was desired to avoid marked mosquitoes liberated during a first experiment confusing the issue by cropping up during a second one. It ought, however, to be possible to find an isotope with a long enough half-life for it to be detected in the egg.

Professor Richards replied that this was difficult as radioactive material had to be fed into the beetle *via* the plant and the egg. The method selected by him was the one believed to be best suited to the species being considered. He continued, in reply to an enquiry by Professor Varley, that about 10 per cent. of the eggs of the beetle survived to become larvae.

Mr. C. N. Hawkins enquired whether these beetles were confined to broom; *Genista tinctoria* had been recorded as a host. Professor Richards said that although this latter was said to be widespread it did not occur sufficiently abundantly for use in the present study. Mr. Hawkins and Mr. K. Spencer mentioned colonies at Bishopswood, Somerset, and north of Hendon respectively, and Dr. van Emden said another species of *Genista* was found on Mitcham Common.

Mr. Balfour-Browne gave a paper on insects of the Glacial Period in Britain, an abstract of which appeared on page 30.

Professor G. C. Varley enquired whether the gap of 30,000 years in the deposits in the kettle hole referred to could not be explained by the depression being part of the drainage system of a river which had removed the overlying deposits, to which Mr. Balfour-Browne replied that, as such a kettle hole has no drainage system, this could not provide an explanation. The gap in the deposits was evidence of the presence of ice and therefore of continuous cold for 30,000 years.

In reply to an enquiry as to how many species of herbaceous plants were represented in the analysis of pollen from the deposits, Mr. Balfour-Browne said about eighteen species were indicated. He also continued, in reply to a further enquiry, that Dr. de Vries was undertaking a re-assay for the dating of the Manchester site, but there did not seem to be any possibility that C^{14} would give a date.

E. B. BRITTON, *Honorary Secretary.*

The next meeting will be held on 4th December at 5.30 p.m.

ADDITIONS TO THE LIBRARY.

Presented.

A Collection of Paintings of Insects on Silk. Probably of Southern Chinese workmanship. [Mr. E. B. Basden.]

Crichton, M. I. The structure and function of the mouth parts of adult Caddis flies (Trichoptera). *Phil. Trans.* (*B*) **241**: 45–91, 1957. [The Royal Society.]

Cushing, E. C. *History of entomology in World War II.* 8vo. Washington, 1957. [Publ. Smithson. Inst. 4294.] [Smithsonian Inst. By exchange.]

Edney, E. B. *The water relations of terrestrial arthropods.* 8vo. Cambridge: Univ. Pr., 1957. [Camb. Monogr. exp. Biol. 5.] [The Publishers.]

[Grunin, K. Y.] *Diptera,* XIX, no. 3. OESTRIDAE. 8vo. Moscow & Leningrad, 1957. [Fauna of U.S.S.R. (N.S.) 68.] [Academy of Sciences of U.S.S.R. By exchange.]

Ross, H. H. *A textbook of entomology.* 2nd ed. 8vo. London: Chapman & Hall, 1956. [The Publishers.]

Ulmer, G. Köcherfliegen (Trichopteren) von den Sunda-Inseln. III. *Arch. Hydrobiol.* (*Supplt.*) **23**: 109–470, 1957. [The Author.]

Wiltshire, E. P. *The Lepidoptera of Iraq.* 8vo. London: Kaye, 1957. [The Publishers.]

Purchased.

Conci, C., & Nielsen, C. *Fauna d'Italia.* Vol. 1. *Odonata.* 8vo. Bologna: Calderini, 1956.

Encyclopédie Entomologique. Sér. B. II. *Diptera.* Tome 9 & 10. 8vo. Paris: Lechavalier, 1937–38, 1939–46.

Imms, A. D. *A general textbook of entomology.* 9th ed. Revised by O. W. Richards & R. G. Davies. 8vo. London: Methuen, 1957.

Stach, J., *The apterygotan fauna of Poland*: SMINTHURIDAE. 8vo. Kraków: Polska Akademia Nauk, 1956.

Stichel, W. *Illustrierte Bestimmungstabellen der Wanzen.* II. *Europa.* (*Hemiptera-Heteroptera Europae*) Hft. 20; Vol. 4, hft. 3. 8vo. Berlin-Hermsdorf, 1957.

In addition, separates have been presented by Rothamsted Experimental Station; State Plant Board of Florida; Los Angeles County Museum; Dr. C. M. Biezanko; the Director, Tsetse Control, Uganda; Dr. M. T. Gillies; Ontario Research Foundation; Dr. T. Clay; C.S.I.R., Melbourne; Dr. J. E. Treherne; Dr. J. M. Whitten; Mr. J. Sneyd Taylor; Mr. C. E. Dyte; Dr. T. A. M. Nash; Mr. R. A. French; Dr. E. Bursell; Dr. J. L. Cloudsley-Thompson; South African Institute of Medical Research and Professor V. B. Wigglesworth, F.R.S.